

In the Claims

Claims 1-46 (cancelled).

Claim 47 (original): A switchable circuit device, comprising:

a porous silicon matrix; and

active molecular switchable memory material within the porous silicon matrix.

Claim 48 (original): The switchable circuit device of claim 47 wherein the active molecular switchable memory material substantially completely fills the porous matrix.

Claim 49 (original): The switchable circuit device of claim 47 wherein the active molecular switchable memory material only partially fills the porous matrix.

Claim 50 (original): The switchable circuit device of claim 47 wherein:

the active molecular switchable memory material has two stable states;

the porous silicon is supported by a semiconductor substrate;

the porous silicon has a first side and a second side in opposing relation to the first side;

a first conductive line is on the first side of the porous silicon;

a second line is on the second side of the porous silicon; and

a current flow from the first conductive line to the second conductive line depends on which of the stable states that the active molecular switchable memory material is in.

Claim 51 (original): The switchable circuit device of claim 47 wherein the active molecular switchable memory material comprises a redox-active catenane.

Claim 52 (original): The switchable circuit device of claim 47 wherein the active molecular switchable memory material comprises a redox-active rotaxane.

Claim 53 (original): The switchable circuit device of claim 47 wherein the active molecular switchable memory material comprises a redox-active pseudorotaxane.

Claim 54 (original): A switchable circuit device, comprising:

- a first conductive layer;
- a porous silicon matrix over the first conductive layer; the porous silicon matrix comprising pores;
- a material dispersed within the pores of the porous silicon matrix, the material having two stable states accessible during operation of the device;
- a second conductive layer over the porous silicon matrix and material; and
- wherein a current flow between the first and second conductive layers is influenced by which of the stable states the material is in.

Claim 55 (original): The switchable circuit device of claim 54 wherein the material has only two stable states accessible during operation of the device.

Claim 56 (original): The switchable circuit device of claim 54 wherein the two stable states of the material are interchanged by oxidation and reduction of the material.

Claim 57 (original): The switchable circuit device of claim 54 wherein the two stable states of the material are interchanged by changing a voltage that the material is exposed to.

Claim 58 (original): The switchable circuit device of claim 54 wherein the material comprises a redox-active catenane.

Claim 59 (original): The switchable circuit device of claim 54 wherein the material comprises a redox-active rotaxane.

Claim 60 (original): The switchable circuit device of claim 54 wherein the material comprises a redox-active pseudorotaxane.

Claim 61 (original): A semiconductor construction, comprising:

a semiconductor substrate;

an insulative material over the semiconductor substrate;

trenches extending within the insulative material;

a first conductive wiring layer within the trenches and partially filling the trenches;

porous silicon over the first conductive wiring layer within the trenches;

an active molecular switchable memory material within pores of the porous silicon; and

a second conductive wiring layer over the porous silicon and active molecular switchable memory material therein.

Claim 62 (original): The switchable circuit device of claim 61 wherein the active molecular switchable memory material comprises two stable states which are interchanged by oxidation and reduction of the material.

Claim 63 (original): The semiconductor construction of claim 61 wherein the active molecular switchable memory material comprises a redox-active catenane.

Claim 64 (original): The semiconductor construction of claim 61 wherein the active molecular switchable memory material comprises a redox-active rotaxane.

Claim 65 (original): The semiconductor construction of claim 61 wherein the active molecular switchable memory material comprises a redox-active pseudorotaxane.

Claim 66 (original): The semiconductor construction of claim 61 wherein the first conductive wiring layer comprises conductively doped silicon.

Claim 67 (original): The semiconductor construction of claim 61 wherein the first conductive wiring layer comprises silicon conductively doped with n-type dopant.

Claim 68 (original): The semiconductor construction of claim 61 wherein the first and second conductive wiring layers comprise conductively doped silicon.

Claim 69 (original): The semiconductor construction of claim 61 wherein the first conductive wiring layer defines lines extending primarily along a first direction; and wherein the second conductive wiring layer is formed in a shape of a line extending primarily along a second direction substantially perpendicular to the first direction.